

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

Claims 1-32. Canceled.

Claim 33. (Currently Amended) ~~The isolated DNA molecule of claim 29, An~~
isolated DNA molecule comprising a nucleotide sequence
encoding the N-methyl transferase of SEQ ID NO:1 and having
the N-methyl transferase enzyme activities of 7-methylxanthine
N3 methyl transferase, theobromine N1 methyl transferase, and
paraxanthine N3 methyl transferase, wherein said isolated DNA
molecule consists of SEQ ID NO:2.

Claims 34-37. Canceled.

- Claim 38. (Currently Amended) ~~The isolated RNA molecule of claim 34, An~~
isolated RNA molecule comprising a nucleotide sequence
encoding the N-methyl transferase of SEQ ID NO:1 and having
the N-methyl transferase enzyme activities of 7-methylxanthine
N3 methyl transferase, theobromine N1 methyl transferase, and
paraxanthine N3 methyl transferase, wherein said isolated RNA
molecule consists of SEQ ID NO:3.
- Claim 39. (Currently Amended) An expression vector comprising the DNA
molecule of claim 29 33 and a plant promoter, wherein said
vector expresses N-methyl transferase in plant cells.
- Claim 40. Canceled.
- Claim 41. (Currently Amended) A vector comprising the DNA molecule of
claim 29 33.
- Claim 42. Canceled.
- Claim 43. (Previously Presented) The vector of claim 41, wherein said
vector expresses an N-methyl transferase with
7-methylxanthine N3 methyl transferase, theobromine N1 methyl
transferase, and paraxanthine N3 methyl transferase activities in
cells of at least one microorganism or plant.

Claim 44. Canceled.

Claim 45. (Previously Presented) A plant cell, plant tissue, or whole plant, wherein said plant cell, plant tissue, or whole plant is transformed with the vector of claim 41 or 43.

Claim 46. Canceled.

Claim 47. (Previously Presented) The plant cell, plant tissue, or whole plant of claim 45, wherein said vector is introduced by infection.

Claim 48. Canceled.

Claim 49. (Currently Amended) A method for producing a plant secondary metabolite selected from the group consisting of 7-methyl xanthine, paraxanthine, theobromine, and caffeine wherein said method comprises

culturing the transformed plant cell, ~~plant tissue, or whole~~

~~plant~~ or plant tissue of claim 45 to form a plant

body, and

culturing said plant body to produce a plant secondary metabolite,

wherein said plant cell, ~~plant tissue, or whole plant~~ or plant

tissue is a *Camellia* or a *Coffea* plant cell, ~~plant tissue, or whole~~ plant or plant tissue.

Claim 50. (Previously Presented) A method for modifying the concentration of caffeine in a cell wherein said method comprises:

culturing said plant cell or plant tissue of claim 45 to form

a plant body, and

culturing said plant body to modify the concentration of caffeine,

wherein said plant cell or plant tissue is a *Camellia* or a *Coffea* plant cell or plant tissue.

- Claim 51. (Previously Presented) The method of claim 49, wherein a transformed whole plant is cultured.
- Claim 52. (Currently Amended) A vector encoding the RNA molecule of claim ~~34~~ 38.
- Claims 53-55. Canceled.